Investigating Carbon Dioxide in a Generic Nacelle Fire Simulator as a Halon 1301 Replacement for the Powerplant Fire Zone

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Previously, FAA Fire Safety scrutinized carbon dioxide [CO2] with a literature review regarding its history and use as a fire extinguishing agent in the aircraft powerplant application. This scrutiny produced outcomes that supported renewed consideration, principally based on its 37%v/v design concentration, as stated in FAA AC 20-100 [1977], exceeding its 28%v/v peak-inertion concentration against common hydrocarbon fuels, as reported in literature. If the stated design concentration can decrease, as suggested, various aspects may favorably alter so use on a modern aircraft is possible, potentially becoming a replacement candidate for halon 1301. Having this as the premise, effort began at the WJ Hughes FAA Technical Center [FAATC] to assess carbon dioxide using a generic nacelle fire simulator [gNFS] and the 4th revision of the associated minimum halon-replacement performance standard. This presentation will overview the outcomes from the literature review and then will provide test results and experience gained to date.